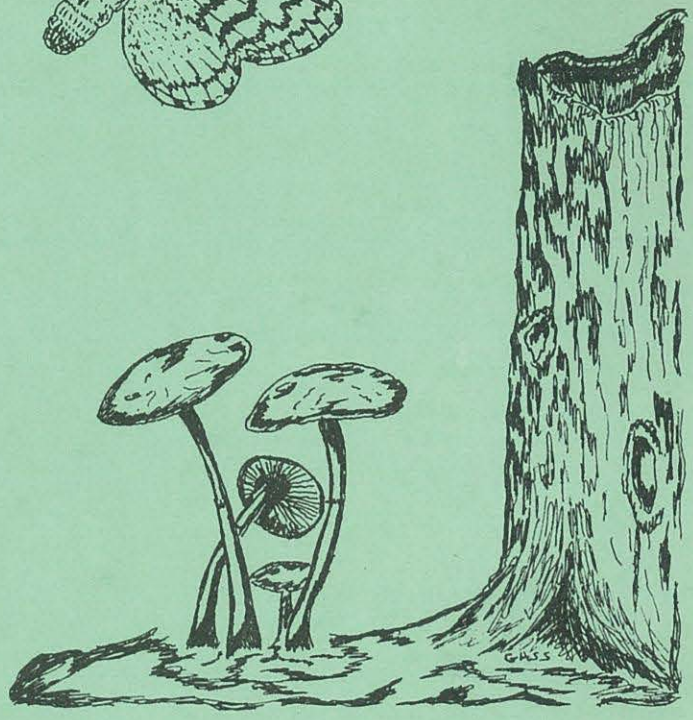
MISSOURI FOREST PEST REPORT 1974



FORESTRY DIVISION

MISSOURI DEPARTMENT OF CONSERVATION

FOREST PEST ACTIVITY

IN MISSOURI - 1974

FORESTRY DIVISION

MISSOURI DEPARTMENT OF CONSERVATION

Carl R. Noren, Director

Osal B. Capps, State Forester

Box 180, Jefferson City, Missouri 65101

Prepared by:

Ramon D. Gass

Forest Insect and Disease Specialist

C O V E R

Female Gypsy Moth
(Actual size; not in flight.)
Porthetria dispar, (L.)

Mushrooms of shoestring rot.
Armillaria mellea (Vahl.)

CONTENTS

	Page
Introduction	1
The Program	1
Conditions in Brief	2
Projects	4
Hardwood Borers and Defoliators	5
Pine Trunk Borers, Twig Borers, and Terminal Feeders	12
Pine Defoliators	13
Forest Diseases	14
Miscellaneous.	16
Summary	16

PLATES

Forest Cover Map	17
Forest Insect & Disease Occurrence Map	18
Shortleaf pine Defoliators Map	19
Oak Wilt Distribution Map	20

FIGURES

1. A Gypsy Moth Trap	5
2. Life Stages of the Gypsy Moth.	6
3. Gypsy Moth Egg Masses	7

Page

4. Variable Oak Leaf Caterpillar Larva 7

5. Carpenterworm Larva 8

6. Red Oak Borer Larva 8

7. Web of Fall Webworm. 9

8. Larvae and Web of Eastern Tent Caterpillar 9

9. Orange-Striped Oakworm Larva. 10

10. Walnut Caterpillar Larva. 11

11. Galls of Maple Bladder Gall Mite on Silver Maple . . . 11

12. Nantucket Pine Tip Moth Damage 12

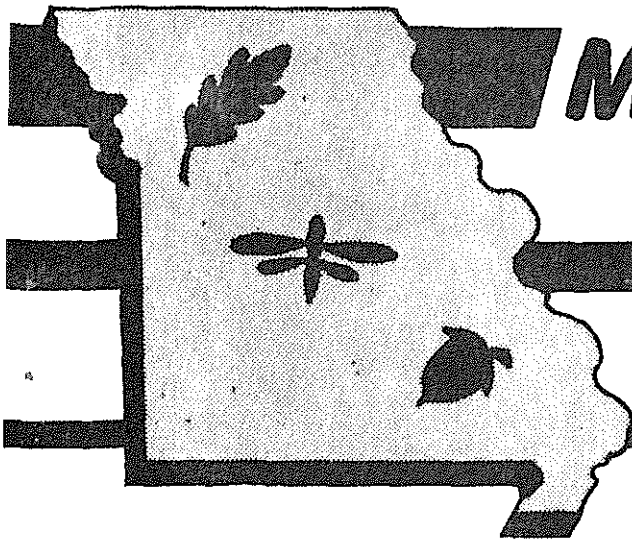
13. European Pine Sawfly Larvae 13

14. Redheaded Pine Sawfly Larva 13

15. Evergreen Bagworms 14

16. Sporophores of Fomes annosus 15

17. "Galls" of Cedar Apple Rust on Eastern Redcedar . . . 15



MISSOURI FOREST PEST REPORT

1974 FORESTRY DIVISION - MISSOURI CONSERVATION COMMISSION Vol. XIII

Introduction

The forest insects and diseases considered in this report this year were either a problem in 1973, caused aesthetic damage to the forest, are a potential problem, endangered the quality of vegetational appearance, or caused log degrade and lumber value loss.

The public is continuing each year to become more conscious of loss of tree quality and mortality.

Generally forest insect and disease conditions were favorable. No unusual epidemics or infections were noted. The gypsy moth has demanded a certain amount of our time. For the first time a male gypsy moth was trapped near Springfield by personnel of the Missouri State Department of Agriculture.

The Program

In 1962, a cooperative program, the Forest Pest Control Program, was entered into with the U. S. Forest Service by the Forestry Division, Missouri Department of Conservation. Under the original agreement this effort is designed to detect, evaluate or appraise and control forest insects and diseases on state and private land. Department foresters report occurrences of damaging or potentially damaging insects and diseases. One specialist on the State Forester's staff continues to administer the Forest Insect and Disease Control Program. One Forest Pathologist in the Forestry Division, serving as special project forester, provided a service to Department personnel and the public in diagnosing approximately 200 requests of plant disease conditions and recommending controls. Likewise, a Forest Entomologist, serving as Assistant District Forester at Sullivan, has provided a service in that area in diagnosing insect and disease problems.

Although difficult to measure, forest insects and diseases have an impact on Missouri's forests. Some of this damage is degrade to the tree rather than mortality. This degrade may reduce tree quality to a cull grade. Damage by hardwood borers often goes unnoticed by the casual observer but foresters acknowledge that millions of dollars can be lost through degrade and growth loss by hardwood borers, defoliating insects, vascular diseases, and rot.

More subtle but very significant is the stress placed upon forest trees by insects, diseases, drought and other natural and artifical factors.

Conditions in Brief

A late winter storm on March 23, 1974, was responsible for erratic responses of plants to new growth for the season. Winter kill of arborvitae was common through a large east-west band in the central part of the state. Spring rainfall was average or normal for the state. Likewise, drought conditions prevailed for July and early August which created some stress (leaf wilting) on forest vegetation.

Probably the late cold snap was responsible for low populations of our annual insect problems. Noteworthy among these was the entire collapse of the Nantucket pine tip moth over most of the state.

Obviously, not all insect and disease occurrences have been reported here. It is an impossibility to detect every small infestation or infection center in the state. Likewise, some additional detection work will be done after this report has been printed.

All pests reported here have been either observed by the specialist or by our Department foresters.

* * * * *

Gypsy Moth, Porthetria dispar, (L.), one male moth was trapped by State Department of Agriculture personnel near Springfield on August 8, 1974. Over 2,400 traps were placed over the state by the State Department of Agriculture, U.S.D.A., A.P.H.I.S., members of the Missouri Campers Association, Conservation Federation, and the Missouri Department of Conservation.

Variable Oak Leaf Caterpillar, Heterocampa manteo (Dbldy.), occurred

in very small numbers in four locations over the state.

Black Turpentine Beetle, Dendroctonus terebrans, (Oliv.), infested weakened sawlog size shortleaf pine in a number of counties where tree mortality was light and scattered.

Asiatic Oak Weevil, Cyrtepistomus castaneus, (Roelofs), infested hardwood forests in south Missouri. Defoliation was common and ranged from three to 20% of leaf surface. This insect also is attracted to light and was a household nuisance in a number of areas.

Nantucket pine tip moth, Rhyacionia frustrana, (Comst.), populations collapsed over most of the state. Infestation was heavy on Scotch pine Christmas trees in the Carthage area.

European pine sawfly, Neodiprion sertifer, (Geoff.), infestation was not reported this year.

Loblolly pine sawfly, Neodiprion taedae linearis, (Ross), with only few pine limbs being defoliated.

Eastern Tent Caterpillar, Malacosoma americanum, (F.), was absent from the entomological scene in Missouri this year.

Fall webworm, Hyphantria cunea, (Drury), defoliation and webbing was light to moderate in 1974, on walnut, persimmon, hickory, sassafras, sycamore, and a number of other hardwood species. Many saplings were entirely enveloped by this insects web.

* Sycamore anthracnose, Gnomonia platani, (Edg.), infection was light to moderate and not as noticeable as in the spring of 1973. A few inquiries were received regarding this disease as well as anthracnose of other species such as oaks and flowering dogwood.

* Walking stick, Diapheromera femorata, (Say), three areas in the state. Defoliation ranged from 50 to 100% on 1,500 acres.

Walnut anthracnose, Gnomonia leptostyla, (Fr.) Ces. & den., was quite scattered and spotty over the state. Infection not significant to nut production.

Leaf diseases affected various plant species over the state but were not significantly troublesome.

Brown Spot Needle Blight, Scirrhia acicola, (Dearn.), has infected a number of Scotch pine Christmas tree plantations this year. The disease is serious enough for those owners affected to spray for control.

Projects

Every opportunity was taken to inform the public of the status of forest insects and diseases in the state. This was accomplished through personal communication and through the media of television, radio, newspaper, exhibits and special reports.

Woody Bledsoe and Ramon D. Gass made four 3-minute radio tapes for the code-a-phone facility. Thanks to Woody Bledsoe and Tom Troughton for their assistance in this I & D phase of the Pest Control Program.

Public relations and information and education are essential ingredients in an insect and disease control program. The insect and disease display board was used at the Camdenton Dogwood Festival featuring the gypsy moth. Gypsy moth was also the theme of the display at the S. A. F. Chapter - Missouri Forest Products Association combined meeting at the Jefferson City Ramada Inn on October 11.

No problems of noteworthy significance were found during periodic inspections of shortleaf pine and walnut seed production areas. No Natural Areas suffered from insect or disease problems.

Periodic visits were made to the George O. White State Forest Nursery to detect insect and disease pests. No significant problems were found.

The Forest Insect and Disease Specialist serviced over 120 shade tree requests in Jefferson City and over the state. Field assistance was available and furnished to all foresters. Pest inquiries over the telephone numbered 152. These ranged from the normal insect and disease problems plus mushroom identification and spider and tick control.

The specialist spent eight days with plantation owners and members of the Missouri Christmas Tree Producers Association. Both annual winter and summer meetings were attended. The specialist presented information about the gypsy moth at the summer meeting.

The specialist and Forest Pathologist, Robert Anderson, established five oak wilt spread plots on the Rudolph Bennitt Wildlife Area north of Columbia

to determine the changing status of oak wilt in this area.

A total of seven insect and disease status reports (March through September) were prepared and sent to 800 individuals.

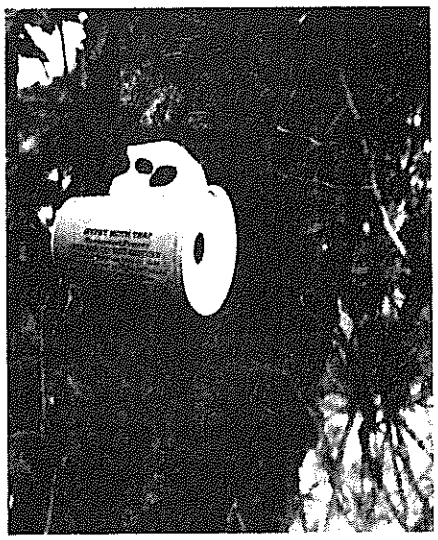
The section "Gypsy Moth Watch" in the 1974 status reports was supported by other states' input by varying degrees of success. This section is included to keep all informed of the status of the gypsy moth in the midwest. It is only as successful as the information we receive.

Following distribution of the September and last status report, we received word from L. B. Matzenbacher Plant and Pesticide Specialist Supervisor, Illinois Department of Agriculture, that a single male moth was found on August 12, 1974, at a rest stop area on Interstate 80 and 294 in southeast Cook County and on August 8, 1974, eleven male moths were found in three traps in the area of the 1973 single finds.

It is common knowledge now that personnel of the Missouri State Department of Agriculture found a single male gypsy moth in a trap near Springfield on August 8, 1974. Additional traps were placed in this area but no more moths were caughs.

Hardwood Borers and Defoliators

Gypsy Moth, Porthetria dispar, (L.), although no infestation is present in Missouri, is number one in survey and educational activities at this time. At every suitable opportunity, efforts are being made to educate the public about this insect. Displays are provided, slides shown, and literature distributed to better inform the public as to the devastating potential of the moth.



ns 33677

Baited trap used to find infestation.

Figure 1 - A Gypsy Moth Trap

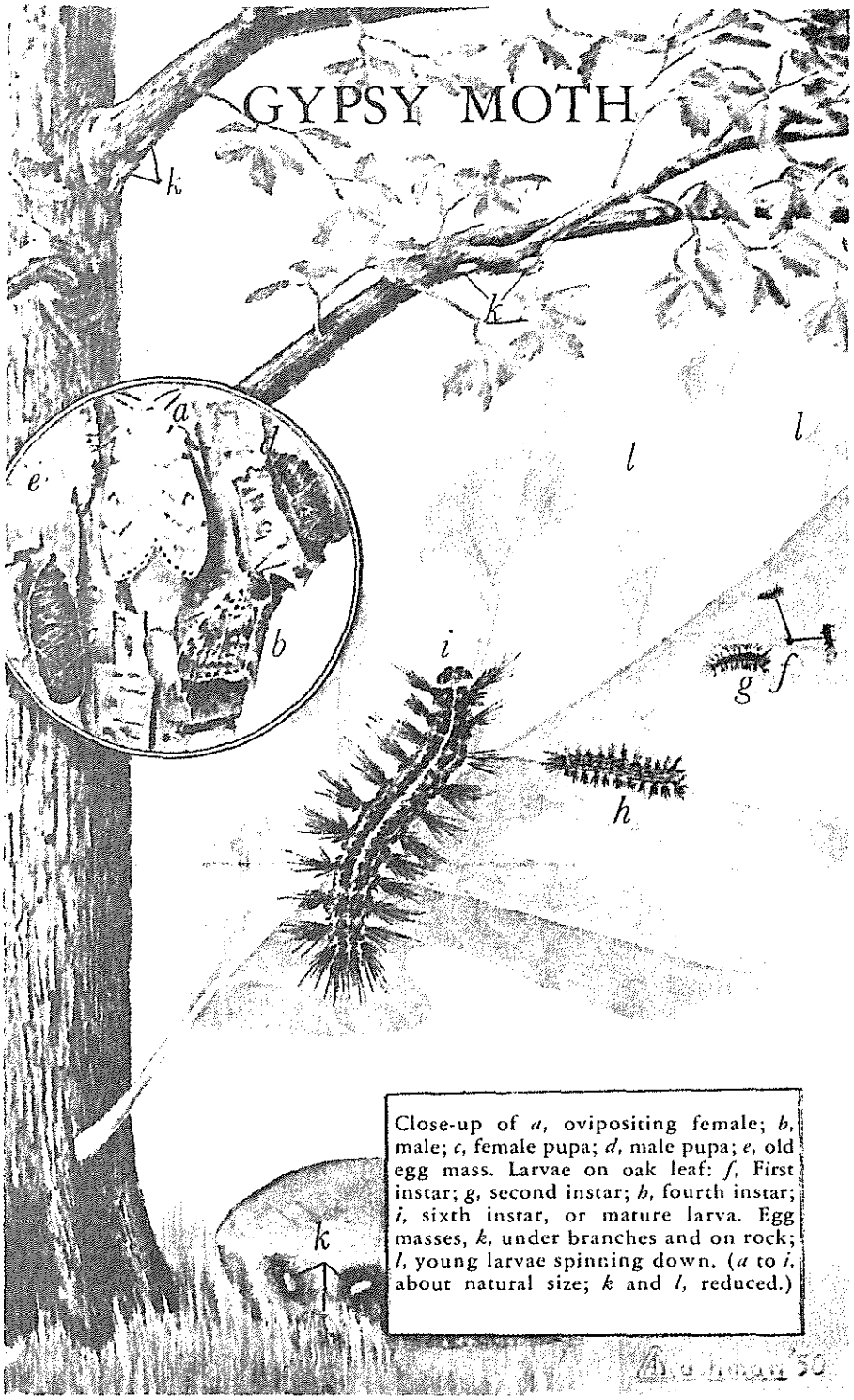

GYPSY MOTH
k
k
a
e
b
l
l
l
i
g
f
h
k
Close-up of a, ovipositing female; b, male; c, female pupa; d, male pupa; e, old egg mass. Larvae on oak leaf: f, First instar; g, second instar; h, fourth instar; i, sixth instar, or mature larva. Egg masses, k, under branches and on rock; l, young larvae spinning down. (a to i, about natural size; k and l, reduced.)

Figure 2 - Life Stages of the Gypsy Moth

The life cycle of the gypsy moth parallels that of a number of other insects. The gypsy moth is not native to the United States and larvae feed on a great variety of hardwood foliage in spring and early summer. Three repeated defoliations may kill hardwood trees.

Gypsy moths overwinter in masses on bark, rocks, litter, or on man-made features.

Egg masses on tree.

Figure 3 - Gypsy Moth Egg Masses

Variable Oak Leaf Caterpillar, Heterocampa manteo, (Dbldy.), populations were very low this year. Only a few cases were reported involving small numbers of larvae.

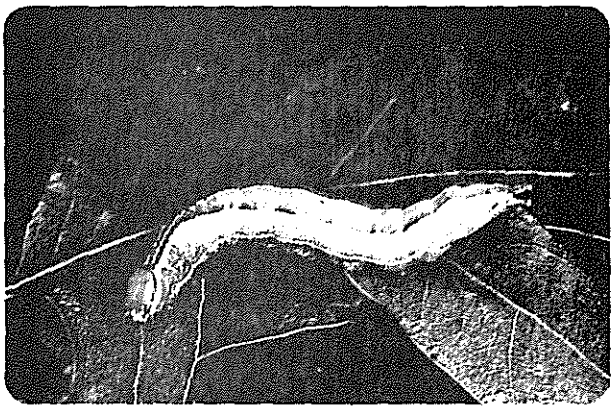


Figure 4 - Larva of the Variable Oak Leaf Caterpillar

The Carpenterworm, Prionoxystus robiniae (Peck.); Red Oak Borer, Enapholodes rufulus, (Haldeman); and other living tree hardwood borers continue to infest oak stands. Trend - Infestation will continue to occur as in the past. Loss to hardwood borer degrade is still amounting to over $600,000 annually. Suppression - No formal suppression activities were conducted to control borers in forest stands.

Figure 5 - Carpenterworm Larva

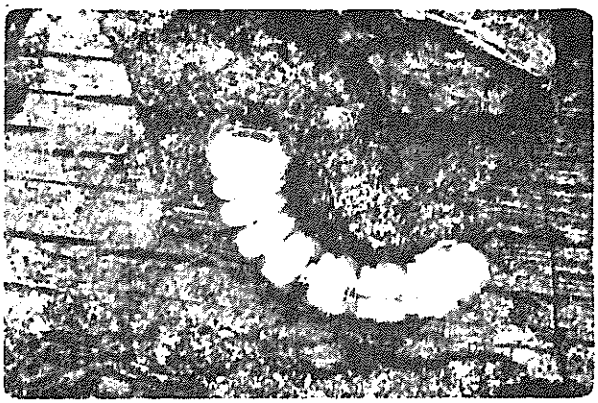


Figure 6 - Red Oak Borer Larva

The Cottonwood Twig Borer, Gypsonoma haimbachiana; Cottonwood Borer, Plectrodera scalator; Cottonwood Leaf Beetle, Chrysomela scripta, (F.), and the Poplar Tent Maker, Ichthyura inclusa, continue to infest cottonwood where it grows. Borer damage is greater on trees growing on poorer sites. Defoliation by the poplar tent maker occurred almost everywhere on cottonwood. Trend - No increase in infestation is anticipated in 1975. Suppression - No control was conducted for any of these pests in 1974.

Asiatic Oak Weevil, Cyrtepistomus castaneus, (Roelofs), was widespread and very abundant in the south part of the state. Defoliation was light to heavy on oaks. This insect was a nuisance in homes. Trend - Populations are expected to build in 1975. Suppression - There is no practical control for the beetle under forest conditions.

Figure 7 - Web of Fall Webworm

Fall Webworm, Hyphantria cunea, (Drury), infestation on a statewide basis was light to moderate. There was a dramatic decrease from 1973. Defoliation and webbing was present on walnut, persimmon, hickory, birch, and sycamore. Many sapling size persimmon were completely enveloped in webs. Trend - Light to moderate defoliation should continue in 1975 in many areas of the state. Suppression - With the exception of individual colony control on ornamentals and nut orchards, no widespread control was attempted.

Figure 8 - Larvae and Web of Eastern Tent Caterpillar

Eastern Tent Caterpillar, Malacosoma americanum, (F.), was absent from the scene this spring in Missouri. The winter storm on March 23, is probably responsible for the sharp drop in larval numbers. Trend - Infestation will be absent to light in 1975. Suppression - No suppression was necessary.

The Walking Stick, Diapheromera femorata, (Say), defoliated wooded areas in Randolph, Boone, Howard, and Phelps Counties. Defoliation in certain areas in these counties was moderate to heavy. The walking stick occurred in small numbers over the remainder of south Missouri causing very little defoliation to hardwoods.

Elm Leaf Beetle, Galerucella xanthomelaena, (Shr.), first generation was rather light compared to 1973 on Siberian elm over the state. This is more commonly known as Chinese elm. Two generations of this beetle cause leaves to have a gray, glazed appearance. Trend - Moderate to heavy damage is predicted for 1975. Suppression - With the exception of some shade tree owners spraying, no spray was conducted.

Figure 9 - Orange-Striped
Oak Worm Larva

Orange-Striped Oak Worm Anisota senatoria, (A. and S.), infested pin and northern red oak in several counties. Defoliation occurred on some limbs of sapling size oaks.

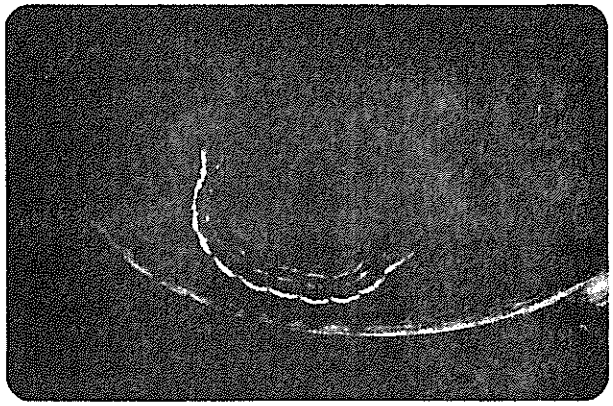


Figure 10 - Walnut Caterpillar
Larva

The Walnut Caterpillar, Datana integerrima, (G. and R.), population was down this year from 1973. Scattered defoliation of walnut was observed but was not serious. A number of species of Datanas infested and defoliated a variety of oak species and also birch. Among these were pin oak, northern red oak, post oak, and shingle oak. No serious defoliation was observed.

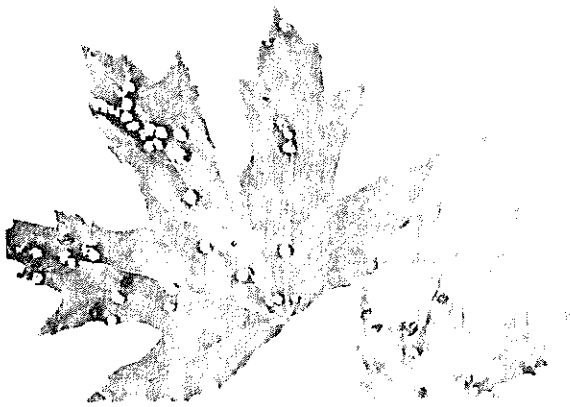


Figure 11 - Galls of Maple Bladder Gall Mite
on Silver Maple

Maple Bladder Gall Mite, Vasates quadripes, was reported on silver maple from various parts of the state. Infestation was light and no damage resulted.

Tree Grasshopper, Dendrotettix quercus, (Packard), was not present this year; however, we expect to experience it in the Oates area of Reynolds County in 1975. Trend - We expect to see this insect next year (1975). Suppression - No control is attempted to control this insect.

* * * * * * * *

Pine Trunk Borers, Twig Borers, and Terminal Feeders

Nantucket Pine Tip Moth, Rhyacionia frustrana, (Comst.), and related species were absent to light in 1974. Overwinter's mortality probably was great owing to the late winter storm. Trend - Light infestations are predicted for 1975. Suppression - No practical chemical control methods were needed for suppression.

Figure 12 - Nantucket Pine Tip Moth Damage

Black Turpentine Beetle, Dendroctonus terebrans, (Oliv.), infested pines in a number of counties this year. Individual trees were attacked resulting from lightning strikes. Infestation was normal this year for Missouri conditions. Trend - Light infestations are predicted where shortleaf pine trees have been disturbed or are in a weak condition. Suppression - Where infestations occurred, recommendations were made to fell trees and either salvage or burn them.

Ips Beetle, Ips pini, infested shortleaf pine already weakened or attacked by the black turpentine beetle. Infestation paralleled that of the black turpentine beetle.

* * * * * * * * * * *

Pine Defoliators

The European Pine Sawfly, Neodiprion sertifer, (Geoff.), was not a problem this year. No reports were submitted for this insect. It is a defoliator of Scotch pine, a Christmas tree species. Trend - Populations will be light in 1975. Suppression - No suppression was necessary.

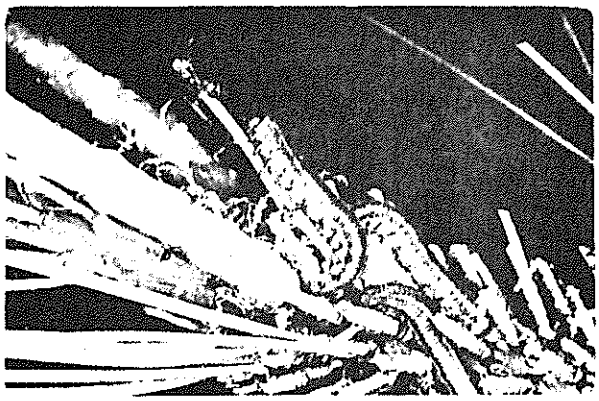


Figure 13 - European Pine Sawfly Larvae

The Loblolly Pine Sawfly, Neodiprion taedae linearis, (Ross), caused very light defoliation to shortleaf pine in 1974. Only a few trees were defoliated by one to two percent of their crowns. Trend - Populations will remain very low in 1975. Suppression - No suppression was necessary.

Redheaded Pine Sawfly, Neodiprion lecontei, (Fitch), caused very light defoliation to scattered shortleaf pine saplings in south Missouri. Trend - Population level is expected to remain low in 1975.

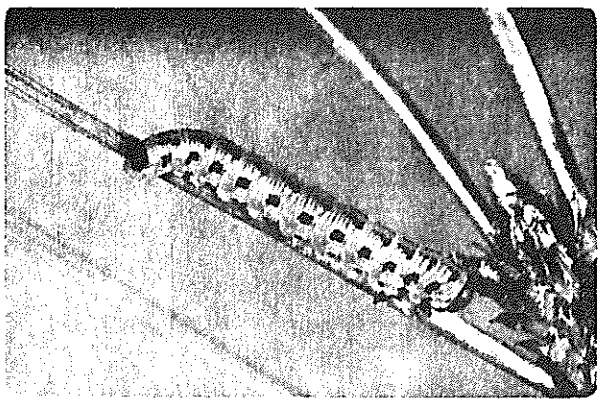


Figure 14 - Redheaded Pine Sawfly Larva

Evergreen Bagworm, Thyridopteryx ephemeraeformis, (Haw.), populations were similar to those of 1973. Feeding on affected ornamental evergreens was heavy. Control was difficult with one application of a recommended insecticide on or around June 15. Trend - Defoliation will continue to be heavy on infested evergreens. Suppression - Many owners sprayed their ornamentals and some handpicked the bags.

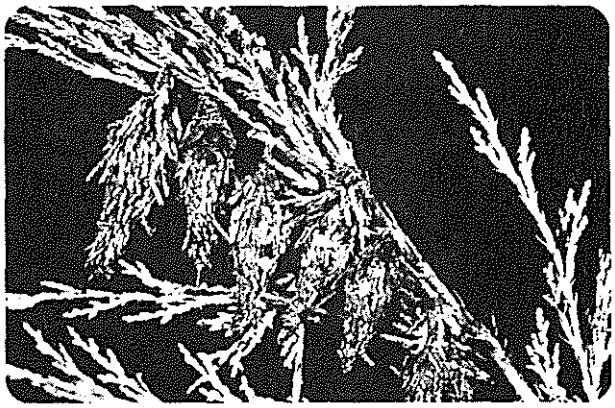


Figure 15 - Evergreen Bagworms

* * * * * * * * * *

Forest Diseases

Sycamore Anthracnose, Gnomonia platani, (Edg.), infection was light to moderate this spring. No inquiries were received as a result of the low infectation levels.

Oak Wilt, Ceratocystis fagacearum, (Bretz, Hunt), occurred in several locations this year. It occurred in the Salem area and in Randolph County on the Rudolph Bennitt Wildlife Area. At present, oak wilt does not seem to appear to be a serious forest disease.

Annosus Root Rot, Fomes annosus, (Fr.) Cke., was suspected in one case this year. Trend - No increase is predicted for 1974. Suppression - Recommendations were made to spray freshly cut stumps with a mixture of Borax and water.

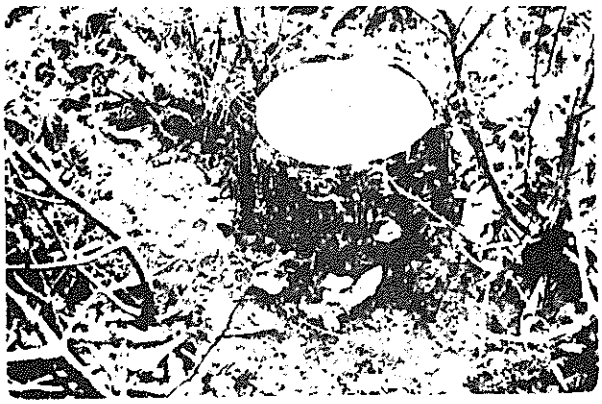


Figure 16 - Sporophores of
Fomes annosus

Dutch Elm Disease continues to be responsible for the death of many elm trees over the state. Many communities have undertaken tree planting projects to beautify their areas as well as to replace those elms that have died with other tree species.

Cedar Apple Rust, Gymnospor angium juniperi - virginianae annually infects cedars and plants in the apple family. Cedars may be sprayed and apple trees should be sprayed with a fungicide to control infection of these plants.

Figure 17 - "Galls" of Cedar Apple Rust
on Eastern Red cedar

* * * * * *

Miscellaneous

Leaf galls were present this year but not as abundant or noticeable as in 1973.

One case of Pales weevil infestation was identified in a central Missouri Scotch pine Christmas tree plantation. Damage was not serious.

The root weevil found in a thinned shortleaf pine stand on the Winona Ranger District was identified as Pales weevil.

A number of inquiries this year involved hardwood borer damage, drought kill or injury, lightning strike, herbicide damage or excess earth fill on top of root system.

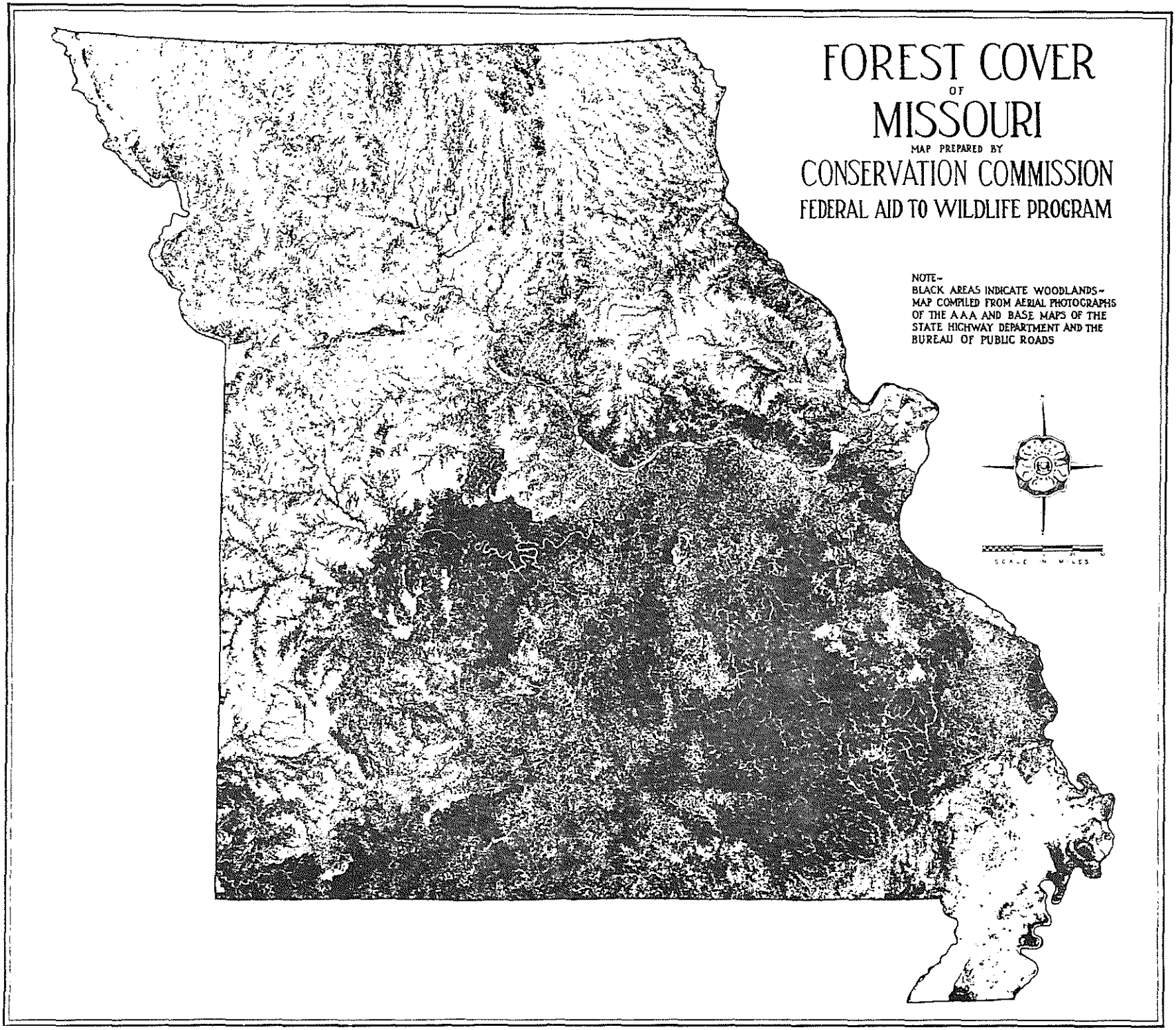
A number of other insects and the feeding were noted by different Department personnel. Noteworthy of mention is the pipevine swallowtail butterfly; sumac Datana; leaf beetle on gum bumelia; lace bugs on sycamore, buckeye and walnut; carpenter bee activity; roughleaf dogwood sawfly, Macremphytus sp.; parsley swallowtail butterfly; red-humped caterpillar, Shizura concinna, (J. E. Smith), and green-striped mapleworm, Anisota rubicunda, (F.).

Summary

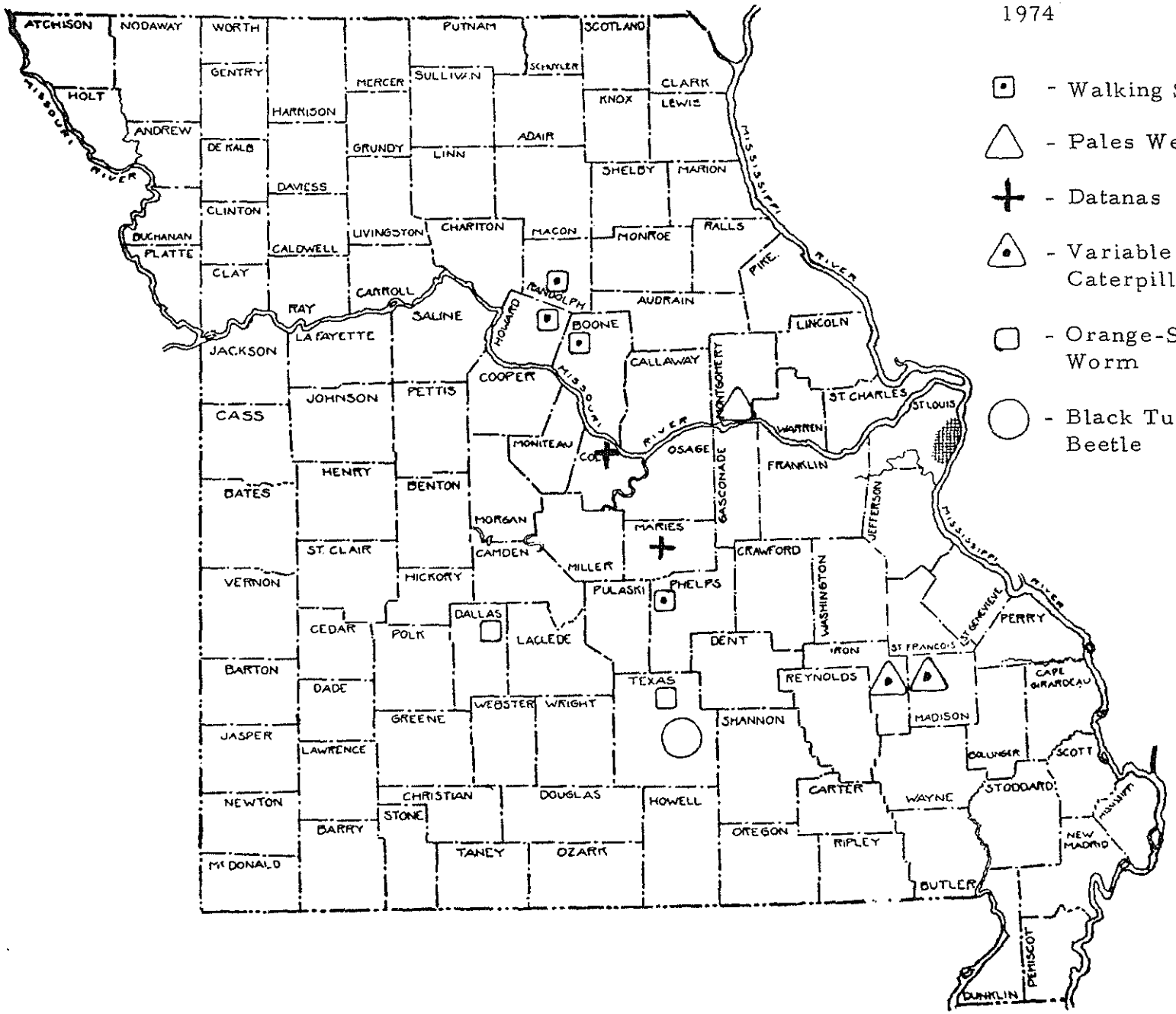
Generally speaking, 1974 was good for insects and diseases (there weren't many insects or disease problems). The frigid Saturday, March 23, altered tree growth and was responsible for the reduction of insect populations over the state.

The active season, 1974, was filled with many projects and activities that were directed toward informing our foresters and assisting the public of being aware of forest insect and disease conditions over the state. This year, 1974 was busy informing the public of insect and disease conditions and of the gypsy moth threat in the Midwest. The most significant of all activities was working with Department personnel and the public and providing service to all who sought answers to their pest problems. We appreciate the assistance of those foresters who submitted reports and observations about pests and those who kept a watchful eye on the forests in their districts.

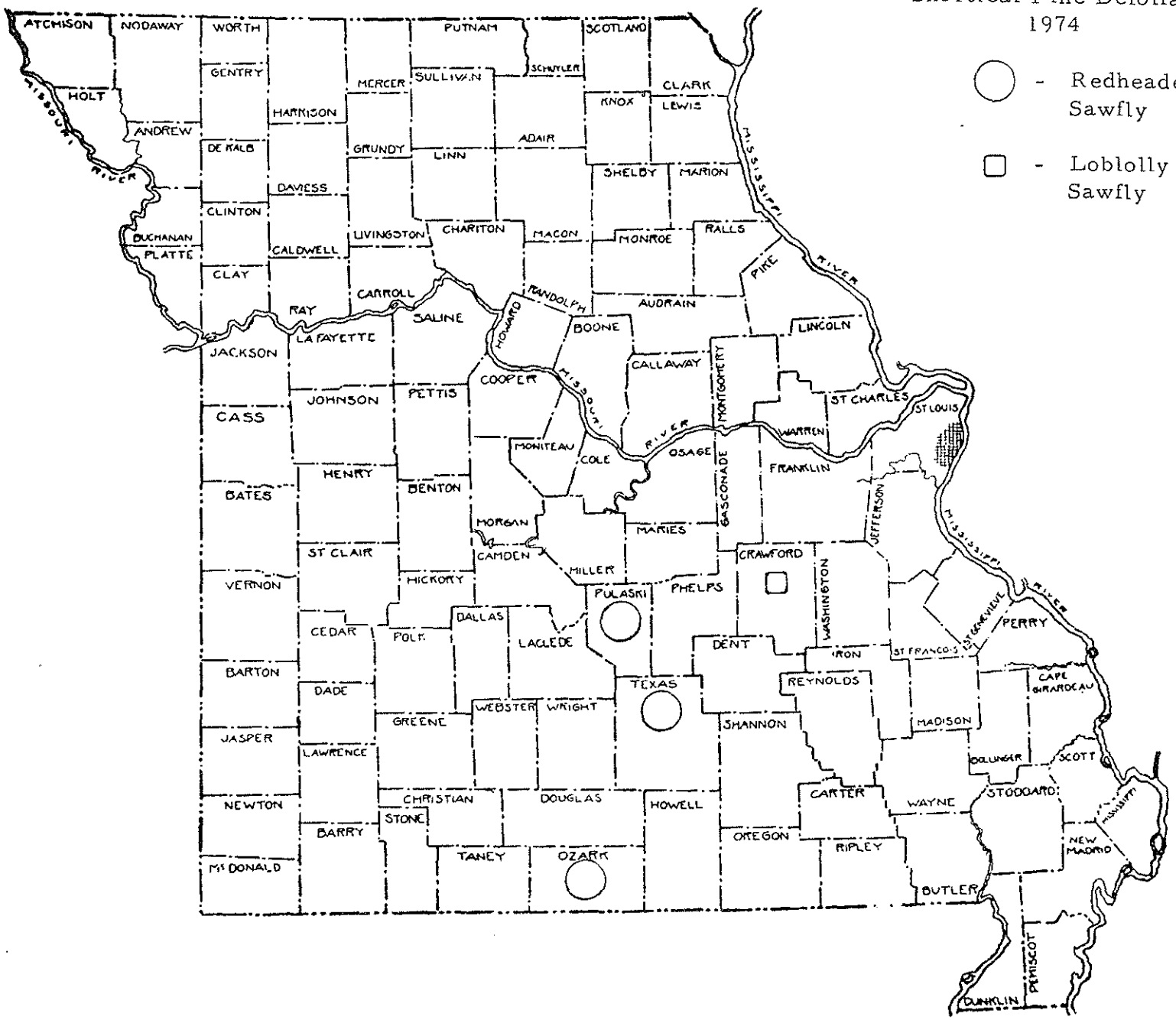
Their efforts made the Forest Pest Control Program more effective and meaningful.


FOREST COVER
OF
MISSOURI
MAP PREPARED BY
CONSERVATION COMMISSION
FEDERAL AID TO WILDLIFE PROGRAM
NOTE-
BLACK AREAS INDICATE WOODLANDS-
MAP COMPILED FROM AERIAL PHOTOGRAPHS
OF THE AAA AND BASE MAPS OF THE
STATE HIGHWAY DEPARTMENT AND THE
BUREAU OF PUBLIC ROADS

Forest Insect & Disease
Occurrence
1974



- Walking Stick
- Pales Weevil
- Datanas
- Variable Oak Leaf Caterpillar
- Orange-Striped Oak Worm
- Black Turpentine Beetle


Shortleaf Pine Defoliators
1974
- Redheaded Pine Sawfly
- Loblolly Pine Sawfly
ATCHISON
NODAWAY
WORTH
PUTNAM
SCOTLAND
GENTRY
SCHUYLER
HOLT
MERCER
SULLIVAN
CLARK
KNOX
LEWIS
HARRISON
ANDREW
ADAIR
DE KALB
GRUNDY
LINN
SHELBY
MARION
DAVIESS
CLINTON
LIVINGSTON
CHARITON
MACON
MONROE
RALLS
DUCHANAN
CALDWELL
PLATTE
CLAY
CARROLL
RANDOLPH
AUDRAIN
RAY
SALINE
HOWARD
BOONE
LINCOLN
JACKSON
LAFAYETTE
COOPER
CALLAWAY
MONTGOMERY
JOHNSON
PETTIS
ST CHARLES
ST LOUIS
CASS
MONITEAU
COLE
OSAGE
WARREN
FRANKLIN
HENRY
BENTON
BATES
MORGAN
MARIES
GASCONADE
JEFFERSON
ST CLAIR
CAMDEN
CRAWFORD
MILLER
VERNON
HICKORY
PULASKI
PHELPS
WASHINGTON
CEDAR
DALLAS
POLK
LACLEDE
DENT
IRON
PERRY
ST GENEVIEVE
ST FRANCOIS
BARTON
DADE
TEXAS
REYNOLDS
CAPE GIRARDEAU
GREENE
WEBSTER
WRIGHT
SHANNON
MADISON
JASPER
LAWRENCE
BOLLINGER
SCOTT
CHRISTIAN
DOUGLAS
HOWELL
CARTER
WAYNE
STODDARD
NEWTON
STONE
BARRY
OREGON
RIPLEY
NEW MADRID
TANEY
OZARK
McDONALD
BUTLER
PEMISCOT
DUNKLIN

Oak Wilt
1974